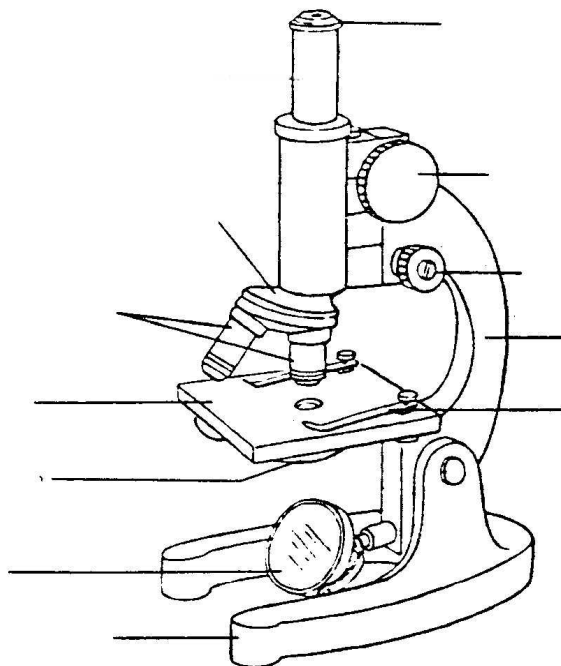


# Chapter 4- A Tour of the Cell

## Microscope & Cell Structure Review

### The Microscope

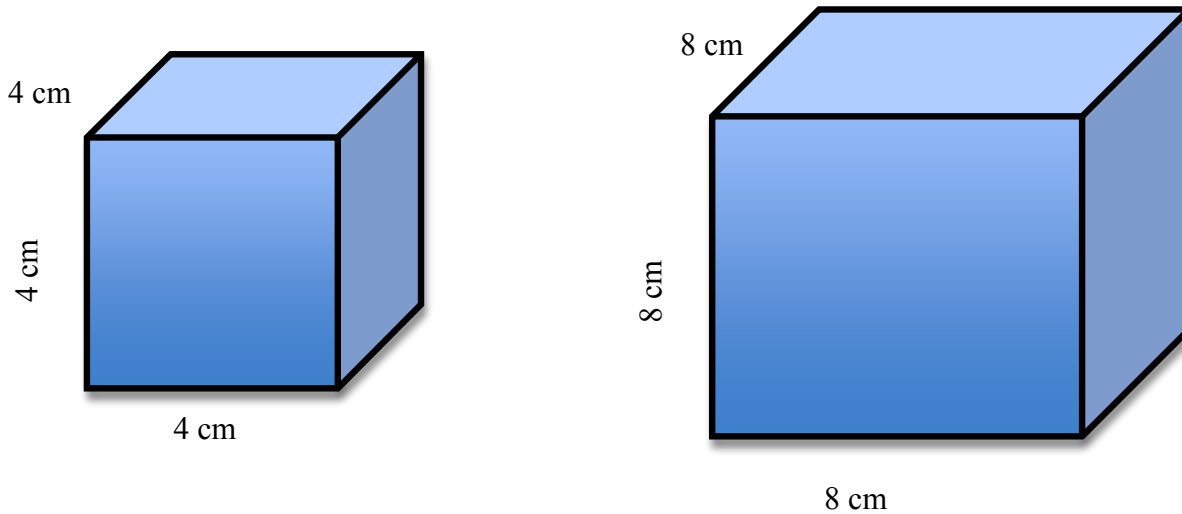
1. Label the parts of the microscope below.



2. Complete the table by writing the microscope part beside the definition.

a.	Regulates amount of light entering scope.	
b.	Brings object into clear, sharp focus.	
c.	Turns to change from one power to another	
d.	Brings object into view.	
e.	Contains a lense capable of 10X magnification	

3. A microscope that has an eyepiece magnification of 10X and an objective lens magnification of 30X has a total magnification of \_\_\_\_\_.
4. We need to use a microscope to see cells because cells are so small. Why can't a cell be as big as a house, or at least as big as a baseball? Compare the two cells diagrammed below. For each cell, calculate the surface area, volume, and ratio of surface area to volume. Then answer the questions.



<i>Cell 1</i>	<i>Cell 2</i>
Surface area: $6 \times l \times l =$	Surface area: $6 \times l \times l =$
Volume: $l \times l \times l =$	Volume: $l \times l \times l =$
Surface/volume: $s/v =$	Surface/volume: $s/v =$

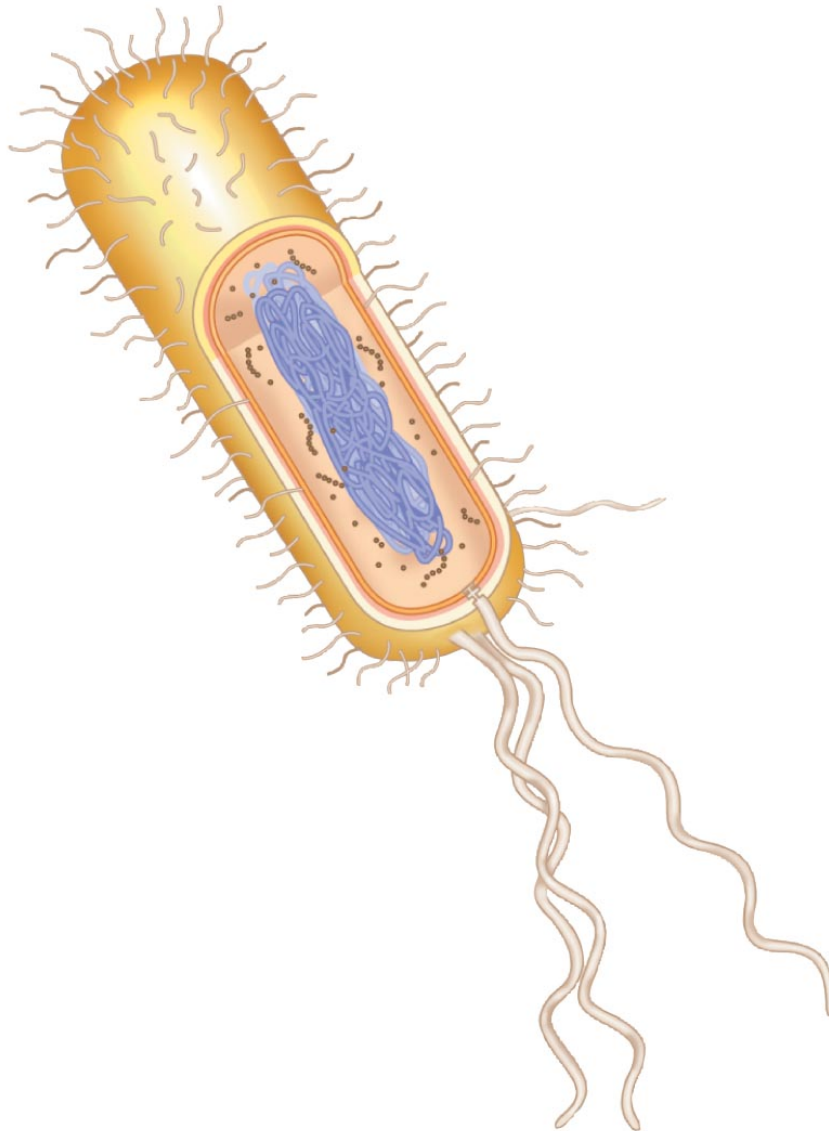
- Which cell has the greater surface area? \_\_\_\_\_
- Which cell has the greater volume? \_\_\_\_\_
- Which cell has the greater ratio of surface area to volume? \_\_\_\_\_
- In which cell would the surface area of the membrane most efficiently service the cytoplasm? Explain.  
 \_\_\_\_\_  
 \_\_\_\_\_

e. What modifications of the less-efficient cell would make it as efficient as the more efficient one?

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5. Bacteria and archaea consists of small, simple prokaryotic cells. Labe the following on this diagram of a prokaryotic cell: **capsule**, **cell wall**, **plasma membrane**, **nucleoid**, **ribosome**, **prokaryotic flagella**, **bacterial chromosomes**. Briefly state the function of each structure next to its label.



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6. Compare the structures of the cells of prokaryotes, plants, and animals by checking off their characteristics below.

<i>Characteristic</i>	<i>Prokaryotic cell</i>	<i>Plant cell</i>	<i>Animal cell</i>
Prokaryotic structure			
Eukaryotic structure			
Membranous organelles			
Plasma membrane			
Cell wall			
Cytoplasm			
Ribosomes			
Bacterial flagellum			
Nucleus			
Nuclear envelope			
Rough endoplasmic reticulum			
Smooth endoplasmic reticulum			
Golgi apparatus			
Lysosome			
Central vacuole			
Mitochondria			
Chloroplast			
Cytoskeleton			

7. Mark each statement below *T* if it is true or *F* if it is false. If the statement is false correct the statement so it is true.

\_\_\_\_\_ a. The inside of a eukaryotic cell consists of the cytoplasm and organelles.

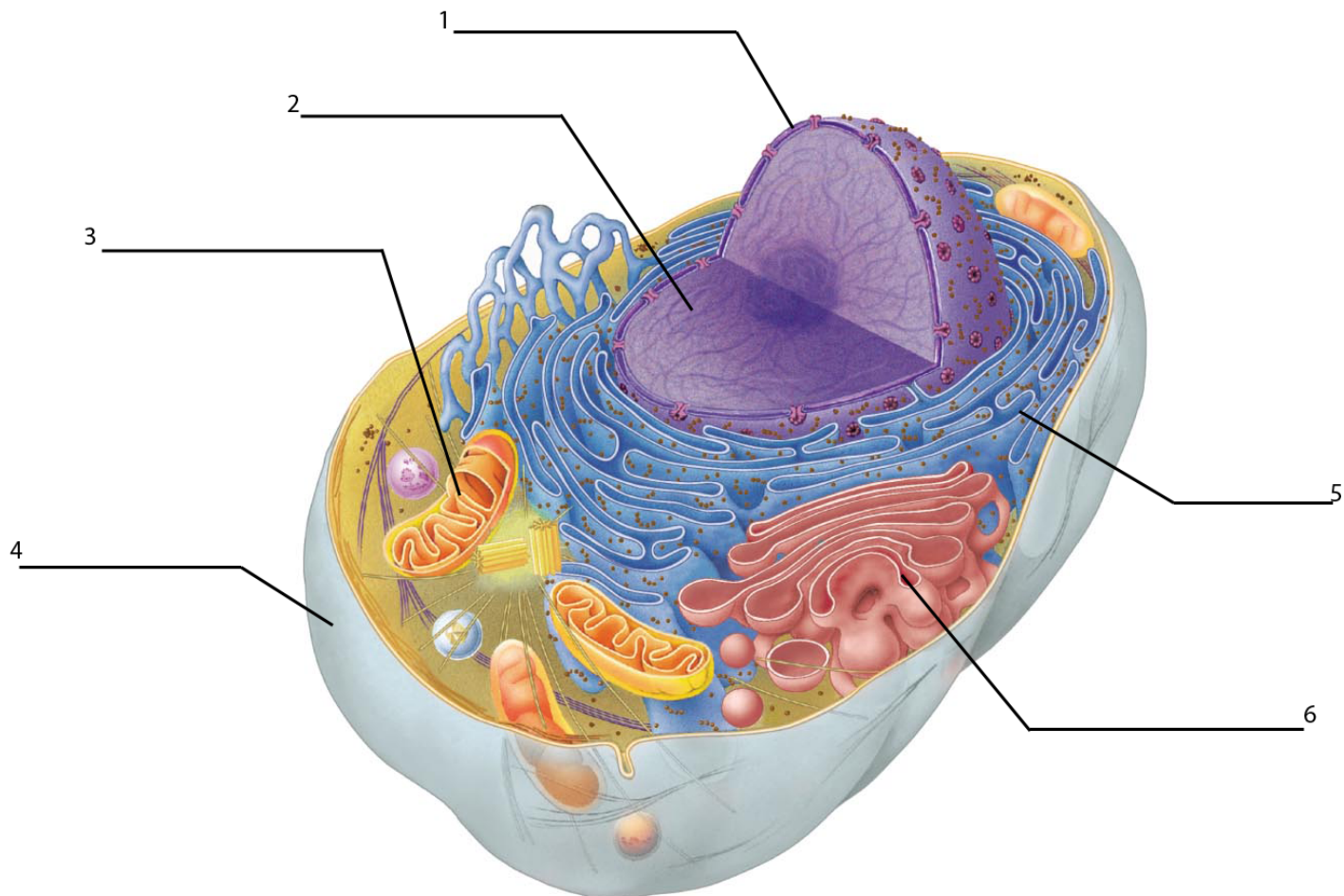
\_\_\_\_\_

\_\_\_\_\_ b. Each organelle in the cell carries out the same function.

\_\_\_\_\_

\_\_\_\_\_ c. Muscle cells, bone cells, nerve cells, and sperm cells are examples of specialized prokaryotic cells.

\_\_\_\_\_



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**8.** Provide the name and function of the labeled structures in the above diagram.

	Structure	Function
1.		
2.		
3.		
4.		
5.		
6.		

Answer the following questions in the spaces provided.

9. Briefly describe the major differences between prokaryotic and eukaryotic cells.

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10. Explain the advantage that eukaryotic cells derive from being compartmentalized by many internal membranes.

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11. An enzyme called salivary amylase is manufactured in the cells of your salivary glands and secreted as part of saliva. Explain how these parts of the cell cooperate to produce and secrete salivary amylase: **transport vesicles, rough endoplasmic reticulum, plasma membrane, nucleus, Golgi apparatus, and ribosomes.**

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